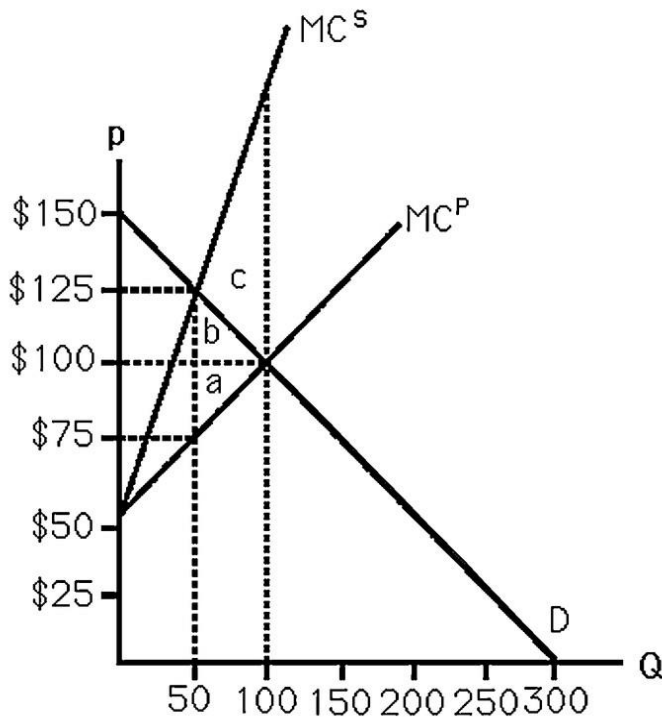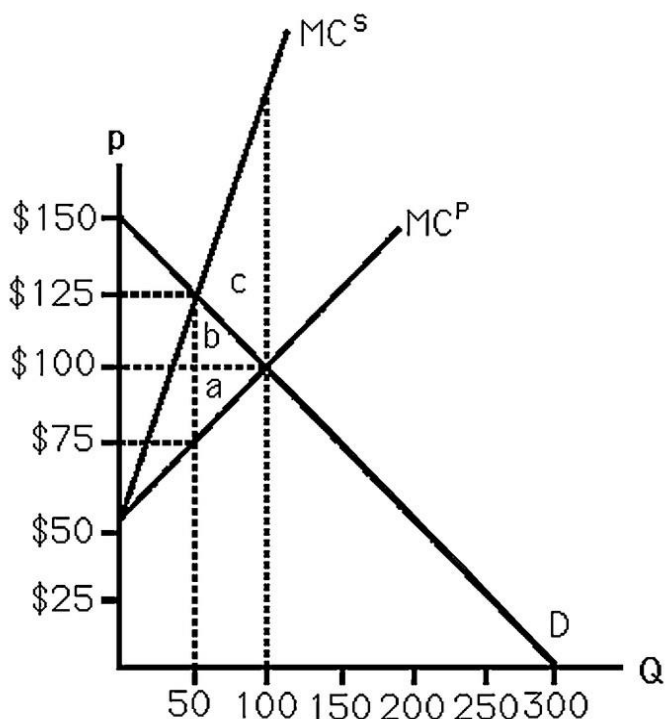MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.
   1) A monopoly might produce less than the socially optimal amount of pollution because   1) _____
      A) it earns economic profit.   B) it internalizes the external costs.
      C) it sets price above marginal cost.   D) it likes to be a good citizen.

   2) The above figure shows the market for steel ingots. If the market is competitive, then to achieve   2) _____
      the socially optimal level of pollution, the government can
      A) institute a specific tax equal to area b.   B) institute a specific tax of $50.
      C) institute a specific tax of $25.   D) outlaw the production of steel.

   3) The above figure shows the market for steel ingots. If the market is competitive, then the   3) _____
      deadweight loss to society is
      A) a.   B) b.   C) c.   D) zero.

   4) The above figure shows the market for steel ingots. The optimal quantity of pollution   4) _____
      A) is 100 units.
      B) is 50 units.
      C) is 0 units.
      D) cannot be determined from the information provided.

5) The above figure shows the market for steel ingots. If the market is competitive, then   5) _____
   A) the socially optimal quantity of steel is zero.
   B) the socially optimal quantity of steel of 50 units is produced.
   C) more than the socially optimal quantity of 50 units of steel is produced.
   D) the socially optimal quantity of steel of 100 units is produced.

6) The exclusive privilege to use an asset is called a(n)   6) _____
   A) property privilege.   B) right to work privilege.
   C) property right.   D) exclusive use agreement.

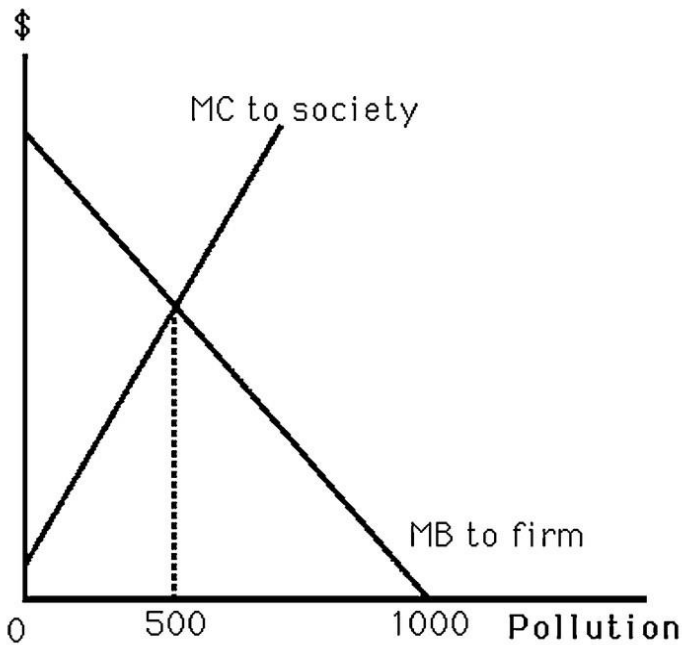7) Positive externalities are created when   7) _____
   A) farmers spray pesticide in their fields and it washes into the local river after the first
      rainstorm.
   B) you purchase the "Mona Lisa" and lock it in a vault.
   C) your neighbor plants beautiful trees and flowers in her yard.
   D) other consumers reduce their demand for coffee and price thereby declines.

8) In the presence of no externalities,   8) _____
   A) social marginal cost and private marginal cost cannot be compared.
   B) social marginal cost is less than private marginal cost.
   C) social marginal cost exceeds private marginal cost.
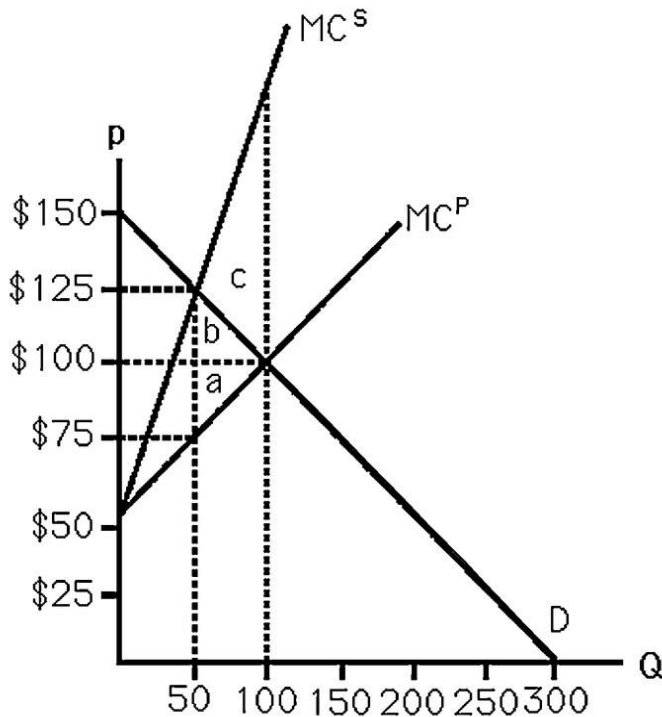   D) social marginal cost equals private marginal cost.

9) The above figure shows the marginal benefit to a firm of polluting in the local river while producing its output, and the marginal cost to the surrounding neighbors. The marginal cost of production is zero for the firm. According to Coase's Theorem, which of the following scenarios is most likely to lead to the socially optimal level of pollution?
   A) The river is jointly owned by one thousand surrounding neighbors.
   B) The firm owns the river, and therefore produces the social optimum no matter what.
   C) The firm owns the river and there is just one nearby neighbor.
   D) The firm owns the river and there are a thousand surrounding neighbors.

9) _____

10) If a production process creates pollution, a competitive market produces excessive pollution because
   A) the firms place too high a price on society's cost of inflation.
   B) the firms do not include the social cost of the pollution in their profit-maximizing decisions.
   C) zero pollution is optimal.
   D) people are not injured by the pollution.

10) _____

11) To alleviate the commons problem, the government can
   A) set a quota.   B) assign property rights.
   C) apply a tax.   D) All of the above.

11) _____

12) In general, an externality is created when
   A) When firms have to pay for pollution the environment.
   B) When the government subsidizes education.
   C) when firms produce a product of low quality and consumers don't like it.
   D) people are affected (other than by price) by a transaction which they were not part of.

12) _____

13) The Commons Problem arises because
   A) social cost equals private cost and property rights are missing.
   B) firms don't maximize profits.
   C) social benefit equals private benefit and property rights are missing.
   D) social and private incentives are not aligned and property rights are missing.

13) _____

14) When majority rule voting is used to determine whether to purchase a public good,

14) _____

A) the sum of the marginal benefits must equal marginal cost.
B) the median voter gets her way.
C) the marginal benefit of the good to the median voter equals the good's marginal cost.
D) the efficient outcome is assured.

15) In a competitive market, a negative externality creates a deadweight loss because   15) _____
    A) price equals social marginal cost.
    B) a harm is generated.
    C) price equals private marginal cost.
    D) the cost of the externality is double counted.

16) The efficient quantity of a pure public good occurs when the marginal cost of producing that   16) _____
good equals the
    A) marginal benefit to each individual.
    B) sum of all individual marginal benefits.
    C) marginal benefit to the median voter.
    D) sum of all individual marginal benefits divided by the number of voters.

17) Suppose two neighbors share a park. One neighbor, Al, leaves trash in the park. This bothers the   17) _____
other neighbor, Bert. According to Coase's theorem, one necessary condition to alleviate the
externality is that
    A) Either Al or Bert owns the park.
    B) Bert has the right to a clean park and Al cannot leave trash.
    C) Al has the right to leave trash and Bert cannot do anything about it.
    D) Al is fined by the government.

18) The result that, under certain circumstances, no government action is needed to control an   18) _____
externality because it can be eliminated by bargaining between the affected parties is called
    A) Coase Theorem.   B) English Bargaining.
    C) Bargaining Theorem.   D) a Nash equilibrium.

19) If a production process generates pollution, then a competitive market will produce more of the   19) _____
good than is socially optimal because
    A) firms ignore the costs of production that they do not incur.
    B) firms incur all costs of production but ignore some of them.
    C) firms take all costs into consideration.
    D) firms set price equal to social marginal cost.

20) Which of the following is NOT a club good?   20) _____
    A) cable television   B) a rock concert   C) a baseball bat   D) a country club

21) Negative externalities are created when   21) _____
    A) a driver drives recklessly on a busy highway.
    B) an increase in the price of butterfat drives up the price of ice cream.
    C) a driver leaves his car in a parking space after the meter expires and receives a ticket.
    D) a driver pulls over to help a stranded motorist fix a flat tire.

22) If a market is subject to a positive externality   22) _____
    A) private benefit will exceed social benefit.
    B) there is only one demand curve.
    C) the demand curve reflecting social benefit will be to the right of the demand curve
       representing private benefit.

D) the demand curve reflecting social benefit will be to the left of the demand curve representing private benefit.

23) The above figure shows the market for steel ingots. An externality can be seen because   23) _____
   A) the private marginal cost exceeds the social marginal cost.
   B) not enough steel gets produced by the competitive market.
   C) the optimal quantity of steel is zero.
   D) the social marginal cost exceeds the private marginal cost.

Chemical Firm

24) The above figure shows the payoff matrix for two firms. A chemical firm must choose between a   24) _____
   low level of production which yields one ton of pollution into a nearby lake and a high level of
   production which yields two tons of pollution into the nearby lake. A private beach on the lake
   must decide whether to operate or not. Increased pollution reduces the number of people who
   wish to visit the beach. If nobody owns the lake, then
   A) the beach operates and the chemical firm produces 1 ton of pollution.
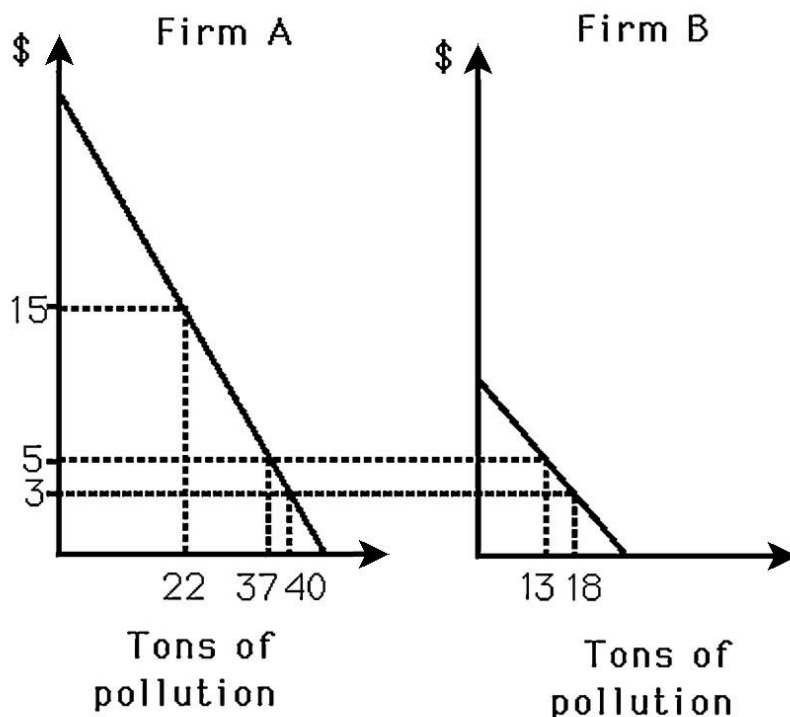   B) the beach shuts down and the chemical firm produces 1 ton of pollution.

C) the beach operates and the chemical firm produces two tons of pollution.

D) the beach shuts down and the chemical firm produces two tons of pollution.

25) The above figure shows the payoff matrix for two firms. A chemical firm must choose between a low level of production which yields one ton of pollution into a nearby lake and a high level of production which yields two tons of pollution into the nearby lake. A private beach on the lake must decide whether to operate or not. Increased pollution reduces the number of people who wish to visit the beach. If the chemical firm owns the lake, and the beach owner must pay $10 to keep the chemical firm at just one ton of pollution, then　　25) _____

    A) the beach operates and the chemical firm produces 1 ton of pollution.

    B) the beach operates and the chemical firm produces two tons of pollution.

    C) the beach shuts down and the chemical firm produces 1 ton of pollution.

    D) the beach shuts down and the chemical firm produces two tons of pollution.

26) The above figure shows the payoff matrix for two firms. A chemical firm must choose between a low level of production which yields one ton of pollution into a nearby lake and a high level of production which yields two tons of pollution into the nearby lake. A private beach on the lake must decide whether to operate or not. Increased pollution reduces the number of people who wish to visit the beach. If the beach owner also owns the lake, and the chemical firm must pay $10 per ton to pollute, then　　26) _____

    A) the beach shuts down and the chemical firm produces two tons of pollution.

    B) the beach operates and the chemical firm produces 1 ton of pollution.

    C) the beach operates and the chemical firm produces two tons of pollution.

    D) the beach shuts down and the chemical firm produces 1 ton of pollution.

27) Which of the following goods has the property of rivalry?　　27) _____

    A) a highway　　　　　　　　　　　　　B) a public beach

    C) a movie screening　　　　　　　　　　D) national defense

28) A commodity or service whose consumption by one person does not preclude others from also consuming it is called a　　28) _____

    A) Coase Good.　　　　B) public good.　　　　C) private good.　　　　D) Giffen Good.

29) A common resource is best described as a resource where　　29) _____

    A) there is a positive externality in production.

    B) there is a negative externality in consumption.

    C) there is a positive externality in consumption.

    D) there is a negative externality in production.

30) A public good in which exclusion is possible is called　　30) _____

    A) an impure good.　　　　　　　　　　B) a club good.

    C) an exclusive good.　　　　　　　　　D) a common good.

31) The total demand for a public good is found by　　31) _____

    A) finding the demand from the median voter.

    B) horizontally summing all individual demands.

    C) dividing the marginal cost of the good by the number of voters.

    D) vertically summing all individual demands.

32) Because a monopoly ignores external costs, it is possible that it will　　32) _____

    A) produce less than the socially optimal quantity of a good.

    B) produce more than the socially optimal quantity of a good.

C) produce the socially optimal quantity of a good.

D) All of the above.

33) The existence of externalities is due mainly to the fact that

33) _____

    A) pollution is not a serious problem.

    B) the optimal level of pollution is zero.

    C) monopolies tend to produce too little of a good anyway.

    D) property rights are poorly defined.

34) If children go to school and become productive members of society,

34) _____

    A) a positive externality is created by the schools.

    B) an externality is created that may be positive or negative.

    C) a negative externality is created by the schools.

    D) no externality is created by the schools.

35) Suppose twenty neighbors share a park. One of the neighbors, Al, leaves trash in the park. This bothers the other neighbors. According to Coase's theorem, assigning the property rights to the park to Al

35) _____

    A) will result in zero trash being dumped in the park.

    B) is unfair.

    C) will achieve the socially optimal quantity of trash.

    D) might still not achieve the social optimum since coordinating the other nineteen neighbors can be costly.

36) If a production process generates pollution, then a competitive market will

36) _____

    A) produce zero output.

    B) produce more of the good than is socially optimal.

    C) produce the socially optimal quantity of that good.

    D) produce less of the good than is socially optimal.

37) In the presence of an negative externality, a specific tax can achieve the social optimum because

37) _____

    A) it internalizes the external cost.

    B) the price of the good rises by the full amount of the tax.

    C) output is reduced to zero as a result.

    D) it directly charges the producer for polluting.

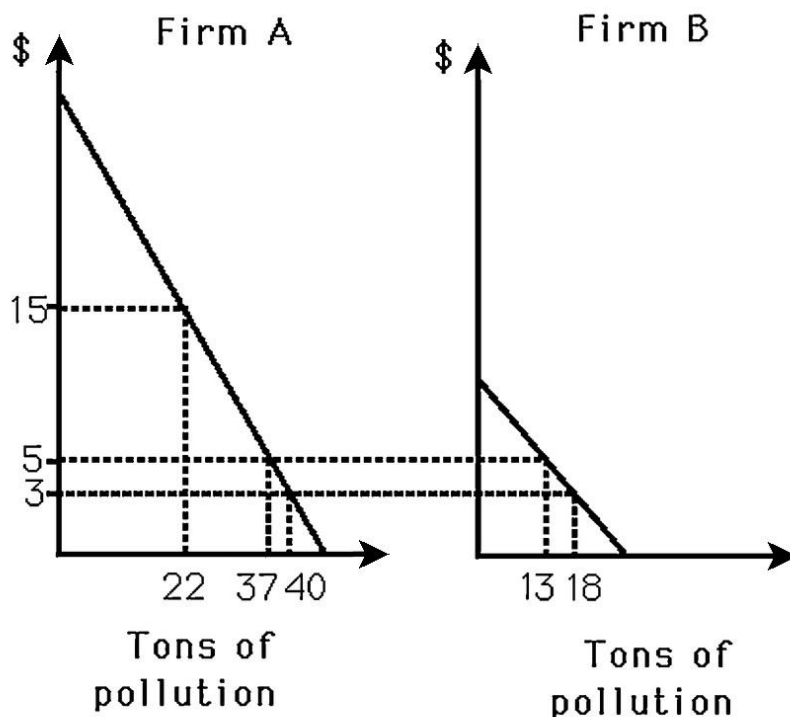**Firm A**

Firm B

Tons of pollution

Tons of pollution

38) The above figure shows the marginal benefit from pollution for two firms. If each firm receives a marketable permit to produce 25 units of pollution, which one of the following is most likely to happen?

    A) Firm B will sell some pollution rights to firm A.
    B) Firm A will produce all 50 units of pollution.
    C) Firm A will sell some pollution rights to firm B.
    D) Both firms will produce 25 units of pollution.

38) _____

39) If a production process creates pollution, a competitive market produces excessive pollution because

    A) private marginal cost of pollution exceeds its social marginal cost.
    B) social marginal cost of pollution exceeds its private marginal cost.
    C) zero pollution is optimal.
    D) the marginal benefit of pollution to the firm is zero.

39) _____

40) If both a monopoly and a competitive market with the same marginal cost would produce a quantity that is greater than the social optimum in a market because of externalities, then

    A) welfare is greater under monopoly.
    B) welfare is the same for both market structures.
    C) welfare is greater under competition.
    D) the social optimum must be zero.

40) _____

41) Production of a good produces pollution that is very damaging with each additional unit. A monopoly facing a very elastic demand curve will most likely produce

    A) more than the social optimum of the good.
    B) no externality.
    C) the social optimum of the good.
    D) less than the social optimum of the good.

41) _____

42) Which of the following statements about private and social costs is TRUE?

42) _____

A) private cost do not include externalities.
B) Social costs exclude externalities.
C) Social costs are never smaller than private costs.
D) All of the above.

43) Suppose two neighbors share a park. One neighbor, Al, leaves trash in the park. This bothers the other neighbor, Bert. According to Coase's theorem, the optimal level of trash in the park can be achieved if
A) Al has the right to leave trash and Bert cannot do anything about it.
B) Al is fined by the government.
C) Bert moves.
D) Al has the right to leave trash and Bert can pay him to limit his dumping.

43) _____

44) If the government wanted to efficiently limit the emission of Carbon Monoxide by all firms to exactly 4 Million tons it could
A) issue rights to pollute worth 4 Million tons and let the firms trade those rights in a market.
B) subsidize production.
C) appeal to firms' environmental conscience to pollute less.
D) rely on the Coase Theorem.

44) _____

45) Suppose two neighbors share a park. One neighbor, Al, leaves trash in the park. This bothers the other neighbor, Bert. According to Coase's theorem, the optimal level of trash in the park can be achieved if
A) Bert moves.
B) government limits the use of the park.
C) someone is assigned property rights to the park.
D) nobody catches Al leaving the trash.

45) _____

46) If the social marginal cost of a good is very high relative to the private marginal cost, then a monopoly will most likely
A) produce more than the social optimum.   B) produce zero pollution.
C) produce the social optimum.   D) produce less than the social optimum.

46) _____

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

Firm A — Tons of pollution

Firm B — Tons of pollution

47) The above figure shows the marginal benefit from pollution for two firms. If both firms receive a marketable permit to pollute 25 units of pollution each, how much will each firm pollute and how much will a permit for one unit of pollution be worth?

48) Suppose that in the market for paper, demand is p = 100 - Q. The private marginal cost is $MCP = 10 + Q$. Pollution generated during the production process creates external marginal harm equal to $MC^e = Q$. Is social welfare greater under monopoly or under competition?

49) Suppose that in the market for paper, demand is p = 100 - Q. The private marginal cost is $MCP = 10 + Q$. Pollution generated during the production process creates external marginal harm equal to $MC^e = Q$. What specific tax would result in a competitive market producing the socially optimal quantity of paper?

1) C
2) B
3) C
4) D
5) C
6) C
7) C
8) D
9) C
10) B
11) D
12) D
13) D
14) B
15) C
16) B
17) A
18) A
19) A
20) C
21) A
22) C
23) D
24) C
25) A
26) B
27) A
28) B
29) B
30) B
31) D
32) D
33) D
34) A
35) D
36) B
37) A
38) A
39) B
40) A
41) A
42) D
43) D
44) A
45) C
46) A
47) Firm B will sell permits to firm A until the marginal benefits are the same for both firms. Firm A will generate 37 tons of pollution and firm B will generate 13 tons of pollution. The market value of a permit will be $5.

48) First, the socially optimal quantity of paper is found by setting $MC^P + MC^e = p$ or $10 + Q + Q = 100 - Q$. Rearranging yields $Q = 30$. The competitive equilibrium is found by setting $MC^P = p$ or $10 + Q = 100 - Q$. Rearranging yields $Q = 45$. The deadweight loss of those additional units equals $(45 - 30) * 45/2 = 337.50$. Under monopoly, the firm sets

$MCP = 100$ - 2Q or Q = 30. The monopoly produces the socially optimal quantity, and therefore has no deadweight loss. Social welfare is greater under monopoly.

49) The socially optimal quantity of paper is found by setting $MCP + MC^e$ = p or 10 + Q + Q = 100 - Q. Rearranging yields Q = 30. At this level of output society incurs an external cost of 30. This is the specific tax that would yield the socially optimal quantity. To check, set MCP + tax = 100 - Q. This yields Q = 30.